

30. *OZOBRANCHUS BRANCHIATUS* (MENZIES, 1791)
 (HIRUDINEA : ANNELIDA)
 FROM PULICAT LAKE, SOUTH INDIA

As revised by the present author (1954) the genus *Ozobranchus* de Quatrefages, 1852 which includes the rather rare gill-bearing leeches, has six species all of them generally ectoparasitic on chelonians. Of them, only *O. shipleyi* Harding, *O. papillatus* Kaburaki, and *O. polybranchus* Sanjeeva Raj were then recorded from India. Subsequently (1959), the author recorded *O. margoi* Apathy, more than a thousand specimens, collected from *Eretmochelys imbricata* (Linnaeus) on the coast at Ennore (12 miles north of Madras). Recently Ghosh *et al.* (1963) recorded *O. branchiatus* (Menzies) from an unidentified turtle on Pirotan Island, Gulf of Kutch.

On 14th October 1964 some post-graduate students and I, while collecting on Pulicat Lake, a large brackish-water lake north of Madras, found two large dead *Chelonia mydas* (Linn.) on the shore. These two turtles were said to have been captured the previous day from the lake, about half a mile from the sea. Both were infested heavily, on the carapace as well as the plastron, with large-sized *Chelonobia testudinarium* Linnaeus. One of the turtles carried on its plastron, just adjacent to the *Chelonobia* patch, a large cluster of leeches recently dead but still quite fresh, gorged with the host blood. They were removed with a scalpel into strong alcohol, about one hundred of them, all belonging to *Ozobranchus branchiatus* (Menzies, 1791).

All these leeches were light flesh-coloured except the posterior part of the abdomen, which was blood-red due to their blood-gorged gut. They ranged from 2 mm. to 9 mm. in total length (inclusive of suckers) and about 1 mm. to 3 mm. in width (inclusive of gills). The younger specimens (from 2 mm. to 3.5 mm. in total length) clearly showed a pair of dark eye-spots on the dorsum of the neck just over the anterior sucker, which really ought to be segment IV. The anterior sucker in most diagrams of this leech has been figured as cup-shaped, but in the present collection some of the younger specimens, up to 2.5 mm. in total length, show the anterior sucker as well spread-out and circular, very much like the posterior sucker but about half its diameter and rather thinner and more translucent. The rim of the anterior sucker is so thin that soon after death it curves inwards so as to look like a cup. Ghosh *et al.* have erroneously called this the mouth; the mouth is a small circular opening, a little anterior to the centre of the sucker, often not easily conspicuous to the naked eye (Sanjeeva Raj & Penner 1962).

Additional information about this leech including a description of the annulation of the neck is given by Sanjeeva Raj & Penner (1962). The

presence of eyes in younger forms and their apparent absence in adults is due to their sinking into the parenchyma (MacCallum & MacCallum 1918, Sanjeeva Raj & Penner 1962). The specimens from Pirotan Island showed no eyes, but in the present collection eyes are visible in individuals up to a total length of 3.5 mm. and, even after that stage, they can be demonstrated either by clearing or by pressing the eye region strongly between two slides.

The host for the Pirotan Island recovery was not identified. Apart from this *O. branchiatus* has so far always been collected from the Green Turtle, *Chelonia mydas* (Linn.). It is interesting to note that when the host gets into brackish waters, both the host and its epizoid forms like *Chelonobia* and this leech tolerate prolonged exposure to lowered salinities. Members of this genus have been collected from estuarine waters before, namely *O. polybranchus* Sanjeeva Raj from the Vellar Estuary at Porto-Novo (1951). These leeches can live for some time on the host after the death of the host and can tolerate desiccation to some extent as they have a mucous exterior. In most earlier collections, this leech has been found associated with either bruised parts or tumorous growths on the host. Similarly, this time it was found around patches bruised by the attachment of *Chelonobia*. It is obvious that such oozing patches on the horny exterior of the chelonians provide an easy blood meal.

Ozobranchus branchiatus (Menzies) is now known from the Tropical Pacific, Australia, Isles of Ogaswara (Japan), Florida, Sarawak, and the east and west coasts of India. Therefore, its range of distribution though broadly confined to the tropics and subtropics is now extended throughout the Indian coast and even into brackish waters. The leech seems to be rather host-specific to *Chelonia mydas* (Linn.).

MacCallum & MacCallum (1918), who obtained egg-capsules of this leech from Florida, noted that just-hatched young ones may be about 1.2 mm. in total length. Many individuals of the present collection measured about 2.0 mm. indicating that these leeches were probably recently hatched, so that we may take it that they breed in about the month of October in the Pulicat Lake area.

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31. STUDIES ON THE CHAETOGNATHA OF THE INDIAN SEAS. PART VIII. ON THE OCCURRENCE OF *SAGITTA FEROX* DONCASTER AND *S. HEXAPTERA* D'ORBIGNY IN THE WATERS OFF VISAKHAPATNAM¹

During the course of our work on the plankton of the waters of the Visakhapatnam coast (1952-58), 16 species of Chaetognaths have already been reported to occur here (refer previous Parts I-VII). In the present note the occurrence of two more species namely *S. ferox* and *S. hexaptera*, recorded for the first time from the waters off Visakhapatnam, are dealt with.

Sagitta ferox Doncaster

There has been some confusion in the literature with regard to the proper identification of this species. As *S. ferox* bears a very close resemblance to *S. robusta* Doncaster, there have been attempts to synonymise the two species. Ritter-Zahony (1911) placed *S. ferox* as a synonym of *S. robusta* and similarly Burfield & Harvey (1926) merged the two species on the grounds of similarity of head armature. However, Thomson (1947) kept them separate and has recorded certain constant differences in body proportions and in the shape of seminal vesicles between the two species. Besides, in *S. robusta* the head and collarete are broader than in *S. ferox* and the former attains a larger size than the latter. Doncaster (1902), also, found similar differences between the two species occurring here as shown in the following table. For comparison 'Warren' material from Thomson (1947) is added just to show the range of variation in the species.

¹ Read at the seminar on 'Some Aspects of Plankton Research' held at Porto Novo in March 1964.